



# NB-IoT

# INDIA'S SMART CITY CHALLENGE

CONGRATULATIONS TO THE WINNERS OF INDIA'S FIRST SMART CITIES CHALLENGE!

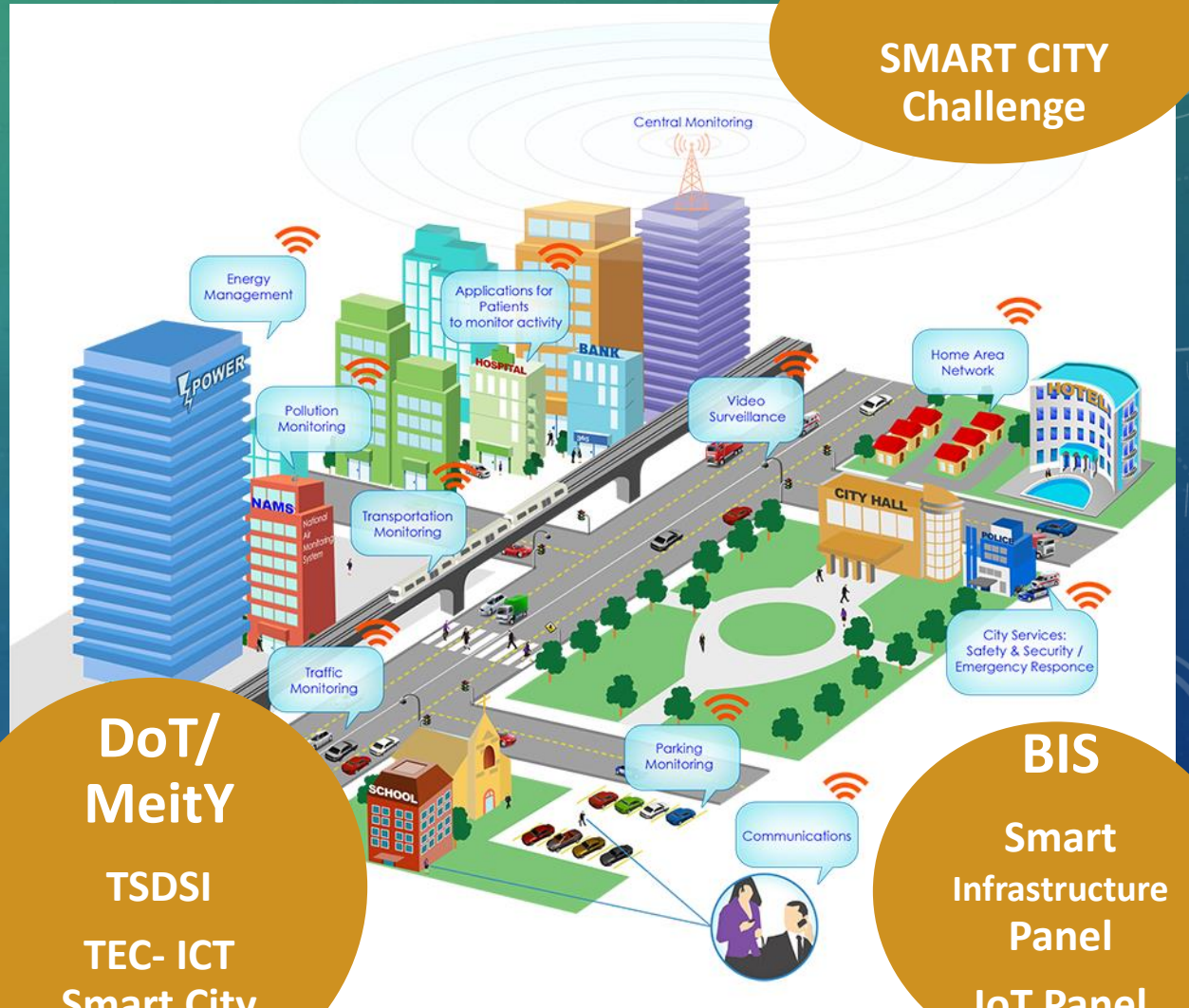


[www.SmartCitiesChallenge.in](http://www.SmartCitiesChallenge.in)  
[facebook.com/SmartCitiesChallenge](https://facebook.com/SmartCitiesChallenge)  
[twitter.com/IndiaCities](https://twitter.com/IndiaCities)

Bloomberg Philanthropies



सत्यमेव जयते



MoUD  
SMART CITY  
Challenge

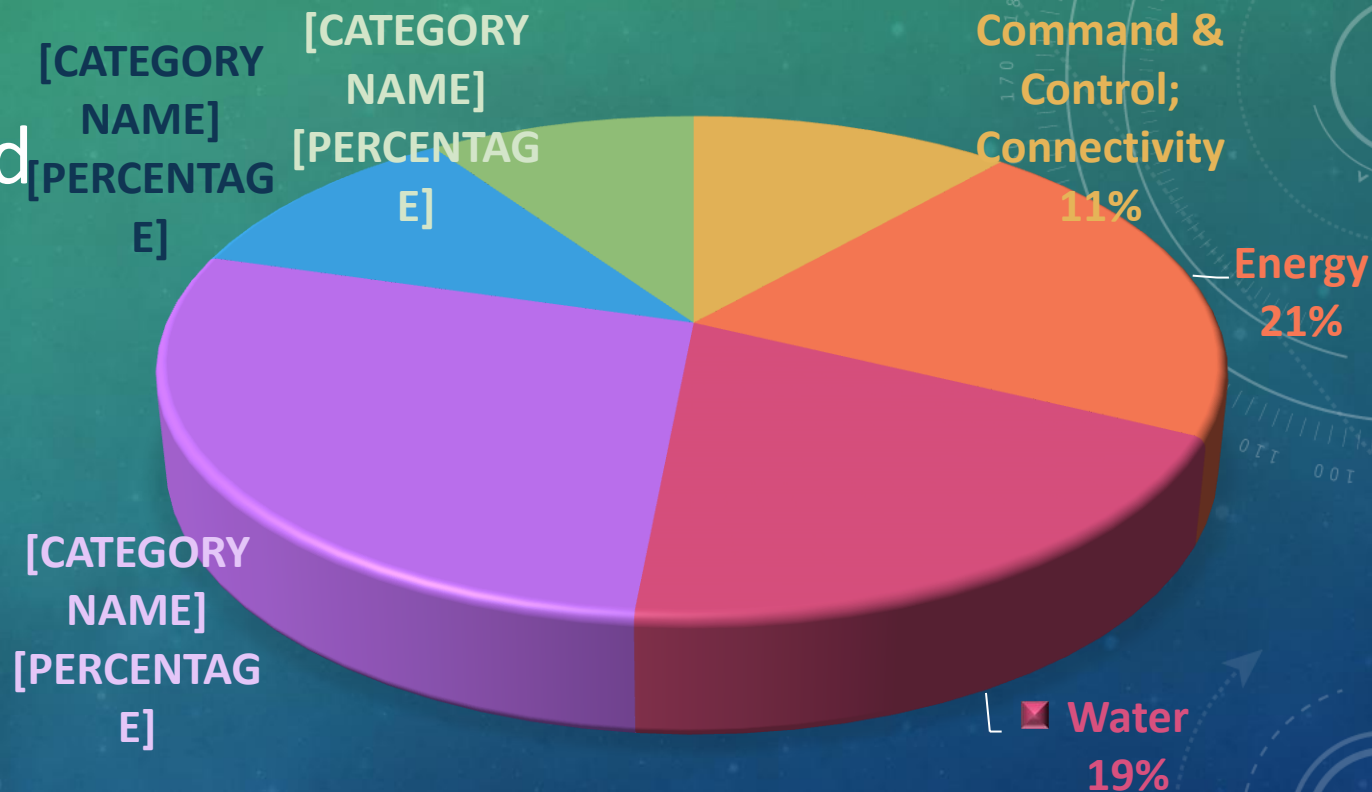
DoT/  
MeitY  
TSDSI  
TEC- ICT  
Smart City  
Forum

BIS  
Smart  
Infrastructure  
Panel  
IoT Panel

# Smart City Solutions in India

“99 smart cities have been selected and to be allocated Rs 2.04 lakh crore (\$30 B)

2020: \$1.5 trillion market



MoHUA has released [Solution Exchange for Transformation of Urban India](#)

[Integrated Command and Control Center: Maturity Assessment Framework](#)

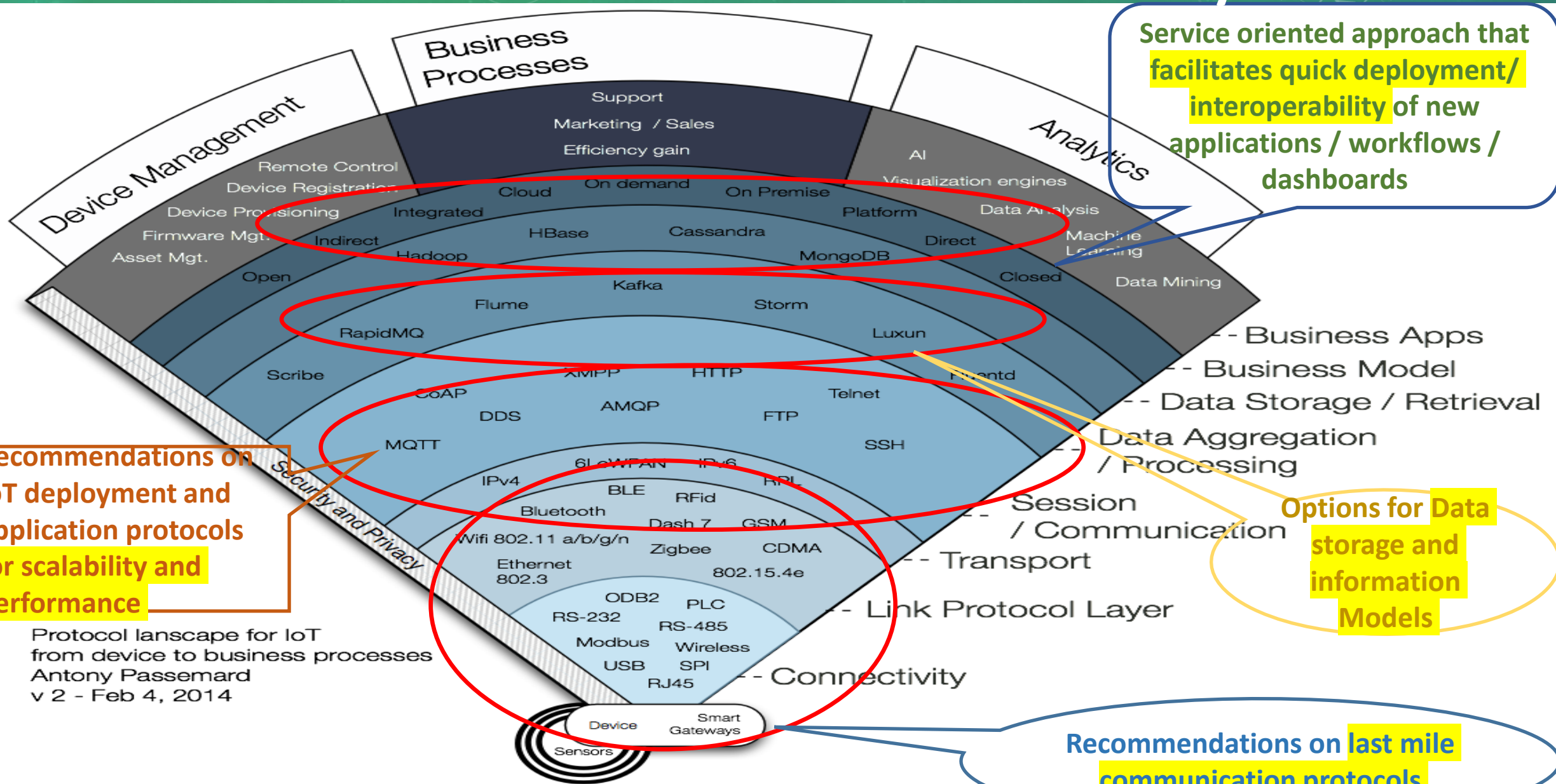
[Smart cities Promoting Innovation Research and Incubation in Technology \(SPIRIT\)](#)

[DataSmart Cities: Empowering Cities through Data](#)

QUEST for an Interoperable Common Services Platform – Is **oneM2M** the answer?



# Dilemma for the SMART CITY SPV today



Protocol lanscape for IoT from device to business processes  
 Antony Passemard  
 v 2 - Feb 4, 2014

# IoT SDOs and Alliances Landscape (Vertical and Horizontal Domains)

Home/Building



Manufacturing/  
Industry Automation



Vehicular/  
Transportation



Healthcare



Energy



Cities



Wearables



Farming/  
Agrifood



Horizontal/Telecommunication



## IoT & Smart Cities: challenges...

**F**orce fitting solutions - without factoring in India specific needs

**A**dvancements in technology - rapid and disruptive

**I**nappropriate last mile solutions - Deployment diversity

**L**imited Tech know-how by Administrators and City Officials

**U**nstandardised disharmony - No common framework and architecture

**R**estricted, closed solutions – vendor lock-in, proprietary interfaces

**E**xamples of failure due to technology, business & functional  
**misalignment** - Nirbhaya tender cancellation, Bangalore Traffic+Metereology

## RECIPE FOR SURE SHOT ...

**F**orce fitting solutions - without factoring in India specific needs

**A**dvancements in technology - rapid and disruptive

**I**nappropriate last mile solutions - Deployment diversity

**L**imited Tech know-how by Administrators and City Officials

**U**nstandardised disharmony - No common framework and architecture

**R**estricted, closed solutions – vendor lock-in, proprietary interfaces

**E**xamples of failure due to technology, business & functional  
**misalignment** - Nirbhaya tender cancellation, Bangalore Traffic+Metereology

# 5 YEAR JOURNEY OF TSDSI AT A GLANCE

**Jan 2014**  
11 Members

Indian Telecom SDO  
RnR, IPR Policy  
Working Procedures  
Partner @ 3GPP & oneM2M

**39 Members**

**Oct 2015**

ITU- IMT 2020 TPR : LMLC mandatory  
3GPP & One M2M –  
Active participation & Contributions  
Transpositions initiated  
Indo-EU Collaboration

**41 Members**

**Feb 2017**

**45 Members**

**Feb 2018**

1811 Standards and Reports  
CPRI – Fronthaul  
ITU - RIT/SRIT submission  
oneM2M as National STD  
**STANDARDISATION ROADMAP**  
3GPP Release 17

**65 Members**

**Mar 2019**

**FORMING**

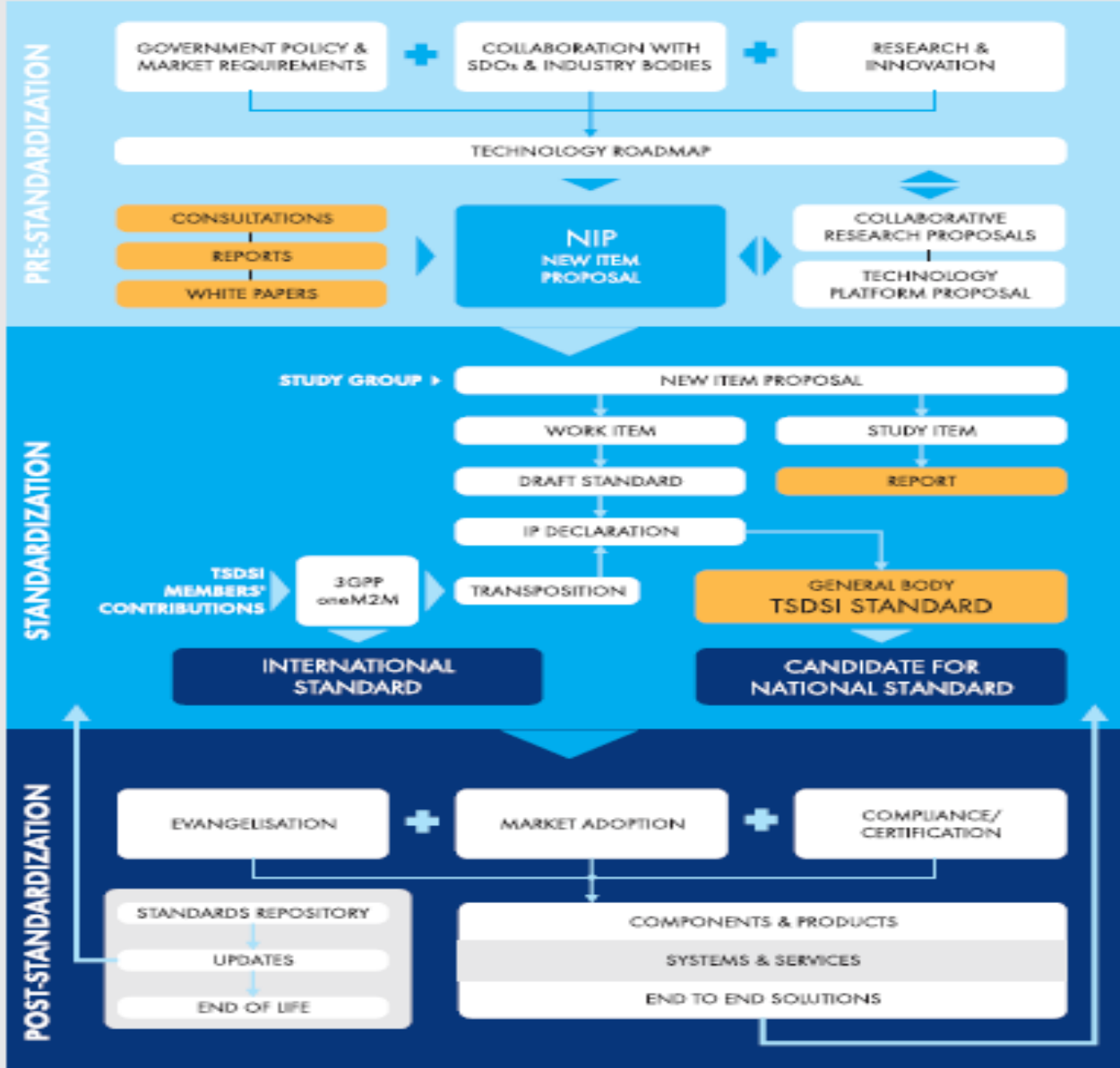
**STORMING**

**NORMING**

**PERFORMING**



### Standards Life Cycle



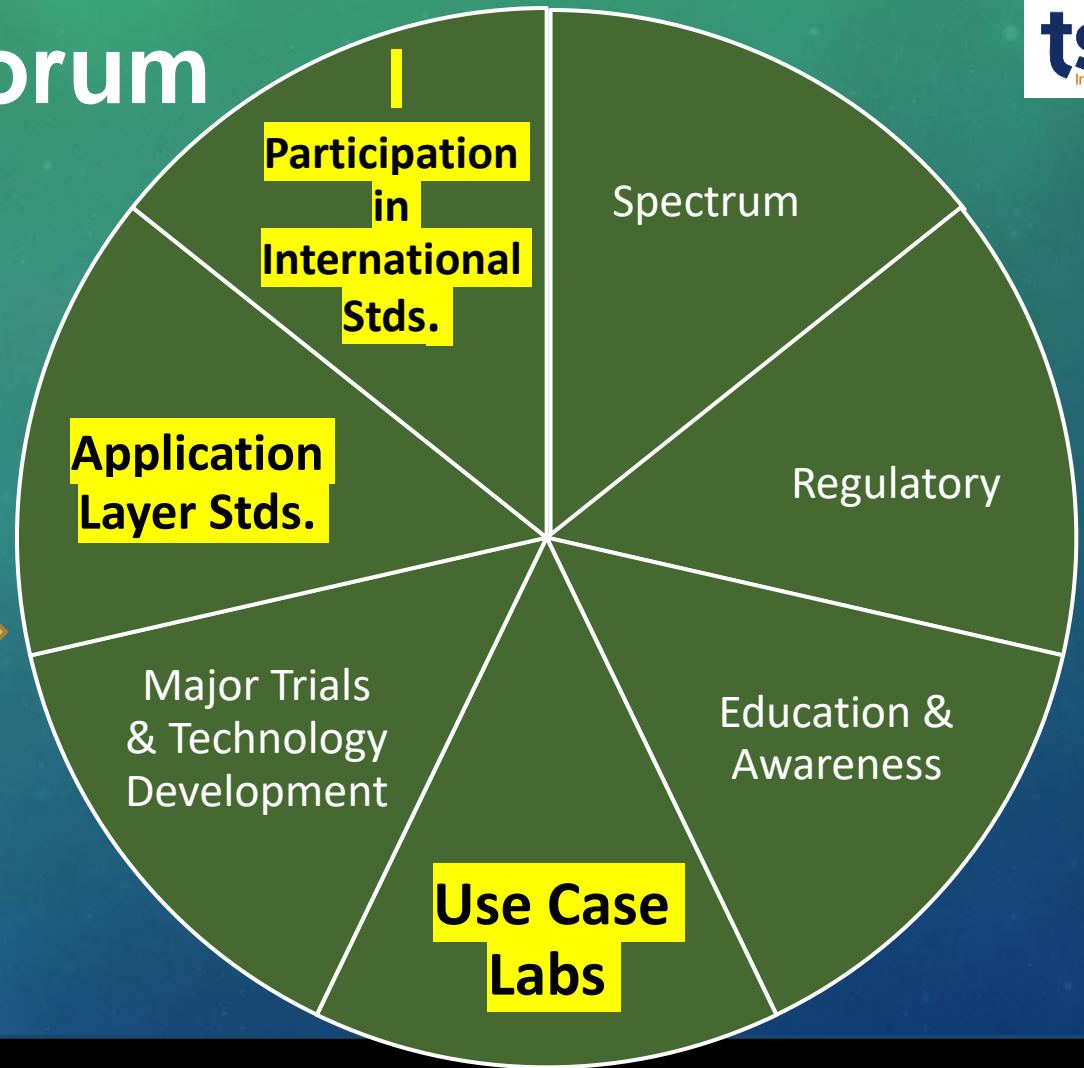
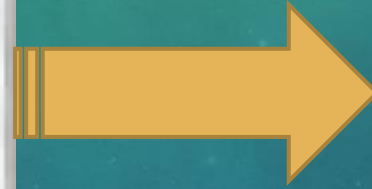
### Study Group- Networks

- CPRI FrontHaul
- Channel Characteristics : 60GHz for 4G/5G backhaul
- Enablers for Private Networks
- NB-IoT Extension
- Broadcast offload
- Spectrum Studies
- IMT2020 (5G) technologies ; 3GPP Release 17

### Study Group- Services & Solutions

- Cloud Interoperability and Portability
- Public Protection and Disaster Recovery
- Dual SIM Services
- Support for Indian Languages
- Information Centric Networking
- UAV/Drone Communications and Services
- M2M/IoT
- Security and Privacy
- oneM2M

# 5G India 2020 High Level Forum

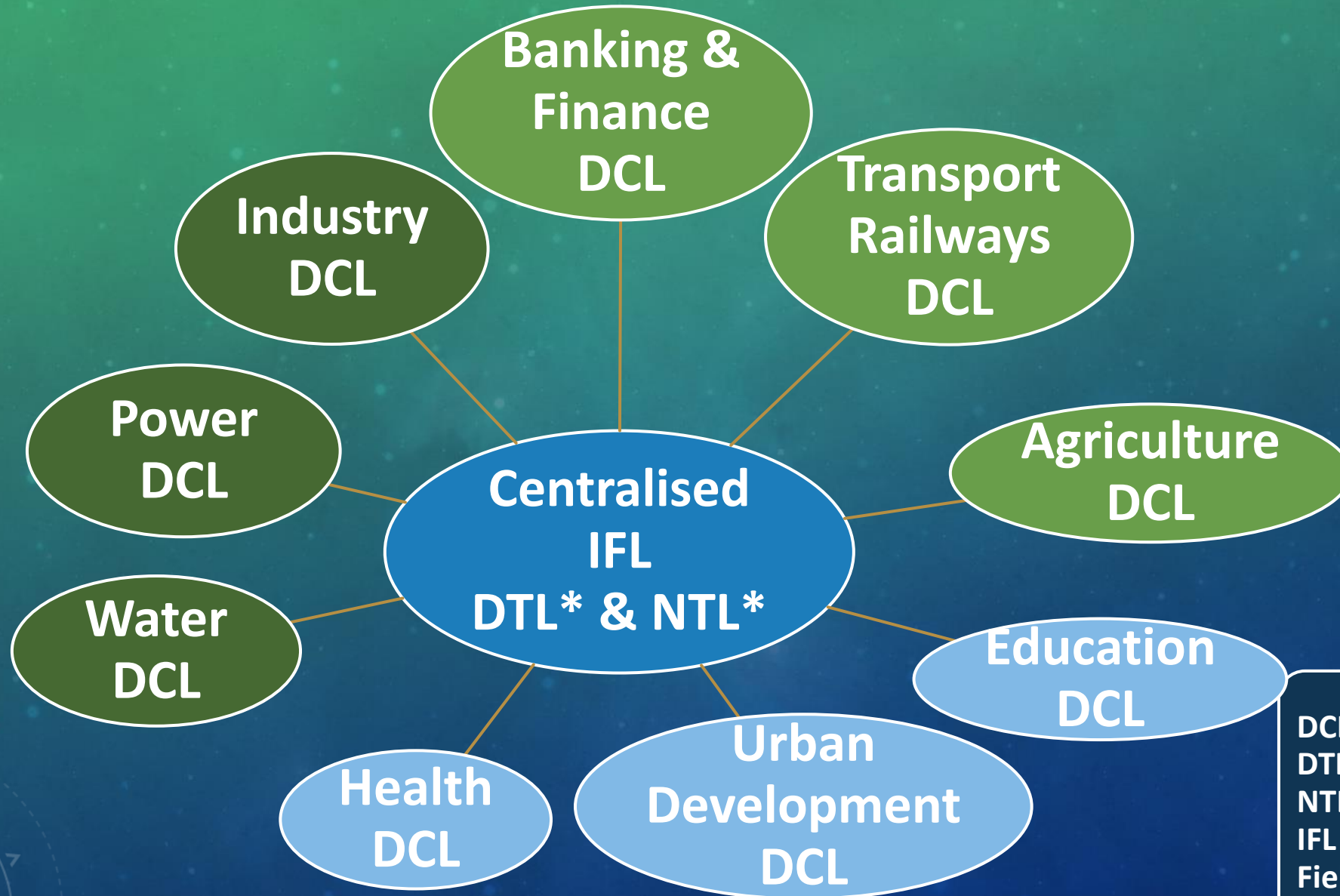


5G technology has the potential of ushering a major societal transformation in India by enabling rapid expansion of the role of information technology across manufacturing, educational, healthcare, agricultural, financial & social sectors.

**India must embrace this opportunity by deploying 5G networks early, efficiently, and pervasively, as well as emerge as a significant innovator and technology supplier at the global level.**

Emphasis should be on 5G touching the lives of rural and weaker economic segments to make it a truly inclusive technology.

# NETWORK OF LABS



First Set of LABS

Second Set of LABS

Third Set of LABS

DCL - Demo and concept Lab  
DTL - Device Testing Lab  
NTL - Network Testing Lab  
IFL - Interoperability and Field Scenario Test Lab



# Application Layer Standards

## DOMAIN Working Groups

USE CASE LABS

MAJOR TRIALS

Smart Cities

Finance

PPDR

Health

Agriculture

Education

Utilities

Transport

Industry

Immersive experience AR/VR

Artificial Intelligence/ Machine Learning

Autonomous Systems

Web Technologies

Integrated Data Exchange

Security and Privacy

IoT /M2M Common Services Layer

Cloud Computing



OPEN ++

Technology Study Groups

Global SDOs

# STRENGTHENING THE GLOBAL FOOTPRINT

